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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
09/849,868	05/04/2001	Wei-Qiang Gao	GENENT.035C1	1085

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EXAMINER
DELACROIX MUIRHEI, CYBILLE

ART UNIT	PAPER NUMBER
1614	

DATE MAILED: 12/06/2002

Please find below and/or attached an Office communication concerning this application or proceeding.

Office Action Summary	Application No. 09/849,868	Applicant(s) GAO, WEI-QIANG	
	Examiner Cybille Delacroix-Muirheid	Art Unit 1614	

-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133).
- Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

Status

1)☒ Responsive to communication(s) filed on *04 November 2002* .

2a)☐ This action is **FINAL**. 2b)☒ This action is non-final.

3)☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

Disposition of Claims

4)☒ Claim(s) *1-18* is/are pending in the application.

4a) Of the above claim(s) *18* is/are withdrawn from consideration.

5)☐ Claim(s) _____ is/are allowed.

6)☒ Claim(s) *1-4,7-10 and 12-17* is/are rejected.

7)☒ Claim(s) *5,6 and 11* is/are objected to.

8)☐ Claim(s) _____ are subject to restriction and/or election requirement.

Application Papers

9)☐ The specification is objected to by the Examiner.

10)☐ The drawing(s) filed on _____ is/are: a)☐ accepted or b)☐ objected to by the Examiner.

Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).

11)☐ The proposed drawing correction filed on _____ is: a)☐ approved b)☐ disapproved by the Examiner.

If approved, corrected drawings are required in reply to this Office action.

12)☐ The oath or declaration is objected to by the Examiner.

Priority under 35 U.S.C. §§ 119 and 120

13)☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).

a)☐ All b)☐ Some * c)☐ None of:

1.☐ Certified copies of the priority documents have been received.

2.☐ Certified copies of the priority documents have been received in Application No. _____ .

3.☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

* See the attached detailed Office action for a list of the certified copies not received.

14)☒ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. § 119(e) (to a provisional application).

a) ☐ The translation of the foreign language provisional application has been received.

15)☐ Acknowledgment is made of a claim for domestic priority under 35 U.S.C. §§ 120 and/or 121.

Attachment(s)

1) ☐ Notice of References Cited (PTO-892)
2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
3) ☒ Information Disclosure Statement(s) (PTO-1449) Paper No(s) _____ .
4) ☐ Interview Summary (PTO-413) Paper No(s). _____ .
5) ☐ Notice of Informal Patent Application (PTO-152)
6) ☐ Other: .

DETAILED ACTION

The following is responsive to Applicant's election received Nov. 4, 2002.

1. Applicant's election of Group I, claims 1-17 in Paper No. 8 is acknowledged. Because applicant did not distinctly and specifically point out the supposed errors in the restriction requirement, the election has been maintained for reasons already of record.

Claims 1-18 are currently pending. Claim 18 is withdrawn from consideration. Claims 1-17 are presented for prosecution on the merits.

Information Disclosure Statement

Applicant's Information Disclosure Statement received Jul. 30, 2001 has been considered. Please refer to Applicant's copy of the 1449 submitted herewith.

Drawings

2. This application has been filed with informal drawings which are acceptable for examination purposes only. Formal drawings will be required when the application is allowed.

Claim Rejections - 35 USC § 112

3. Claims 4, 9 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Regarding claim 4, the phrase "β2-like" renders the claim(s) indefinite because the claim(s) include(s) elements not actually disclosed (those encompassed by " β2- like"), thereby rendering the scope of the claim(s) unascertainable. See MPEP § 2173.05(d).

4. Claim 9 recites the limitation "an agonist antibody" in line 1. There is insufficient antecedent basis for this limitation in the claim. There is no antecedent basis for any agonist antibody in claim 2. Claim 2 recites the administration of a "heregulin agonist antibody." The Examiner respectfully requests adding --heregulin-- before "agonist antibody."

5. Claims 1, 8, 10, 12, 13, 14, 16 are rejected under 35 U.S.C. 112, first paragraph, because the specification, while being enabling for heregulin polypeptides and variants or agonist antibodies thereof, does not reasonably provide enablement for any ligand which activates the HER2 and/or HER3 receptors. The specification does not enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to use the invention commensurate in scope with these claims.

The factors to be considered in determining whether a disclosure meets the enablement requirement of 35 U.S.C. 112, first paragraph, have been described in In re Wands, 8 USPQ2d 1400 (Fed. Cir. 1988). Among these factors are: (1) the nature of the invention; (2) the state of the prior art; (3) the relative skill of those in the art; (4) the predictability or unpredictability of the art; (5) the breadth of the claims; (6) the amount of direction or guidance presented; (7) the presence or absence of working examples; and (8) the quantity of experimentation necessary.

When the above factors are weighed, it is the examiner's position that one skilled in the art could not practice the invention without undue experimentation.

(1) The nature of the invention:

The claims are drawn to methods of inducing hair cell regeneration or inner-ear-supporting cell growth; increasing the number of inner ear supporting cells and treating a hair cell related disorder by administering effective amounts of a ligand which activates the HER2 and/or HER3 receptors.

(2) The state of the prior art

The ligands of the invention can be any ligand capable of activating the HER2 and/or HER3 receptors. The art does not appear to teach ligands, other than heregulin, which are capable of activating the HER2 and/or HER3 receptors.

(3) The relative skill of those in the art

The relative skill of the those in the art is high.

(4) The predictability or unpredictability of the art

The unpredictability of the pharmaceutical and chemical art is high.

(5) The breadth of the claims

The claims are very broad and encompass any ligand which is capable of activating the HER2 and/or HER3 receptors.

(6) The amount of direction or guidance presented

Applicant's specification provides guidance for and is only enabled for the use of heregulin family of polypeptides and agonist antibodies thereof in the claimed treatment methods. However, the specification provides no guidance, in the way of written description, to enable one of ordinary skill in the art to use the invention commensurate in scope with the claims, which, as stated above, are broad and encompass numerous ligands capable of activating the HER2 and/or HER3 receptors. In re Dreshfield, 110 F.2d 235, 45 USPQ 36 (CCPA 1940), gives this general rule: "It is well settled that in cases involving chemicals and chemical compounds, which differ radically in their properties it must appear in an applicant's specification either by the enumeration of a sufficient number of the members of a group or by other appropriate language, that the chemicals or chemical combinations included in the claims are capable of accomplishing the desired result." Applicant's specification does not set forth a representative number of examples of ligands which would be capable of activating the HER2 and/or HER3 receptors and thus be capable of treating hair cell related disorders or inducing the growth of inner ear supporting cells.

(7) The presence or absence of working examples

The examples in Applicant's specification describe using heregulins or agonist antibodies thereof for stimulating inner ear supporting cell proliferation. Thus, the specification enables one of ordinary skill in the art to use heregulins or agonist antibodies thereof in the claimed method.

(8) The quantity of experimentation necessary

Since compound/ligand structure and activity for pharmaceutical use must be determined from case to case by painstaking experimental study, one of ordinary skill in the art would be burdened with undue experimentation to determine all the ligands which would be capable of activating the HER2 and/or HER3 receptors thereby inducing inner ear supporting cell growth and treating hair cell related disorders.

It is respectfully suggested that Applicant amend the claims 1, 14, 16 to recite the limitations of claim 2, for example.

Claim Rejections - 35 USC § 102

6. The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

> A person shall be entitled to a patent unless -
>
> (e) the invention was described in-
> (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effect under this subsection of a national application published under section 122(b) only if the international application designating the United States was published under Article 21(2)(a) of such treaty in the English language; or
> (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that a patent shall not be deemed filed in the United States for the purposes of this subsection based on the filing of an international application filed under the treaty defined in section 351(a).

7. Claims 1, 2, 3, 4, 7-8, 10, 12, 13, 14-17 are rejected under 35 U.S.C. 102(e) as being anticipated by Carnahan 6,017,886.

Carnahan discloses methods for treating vestibular disorders such as loss of balance due to utricular degeneration or disease in mammals, including humans, by administering effective

amounts (0.10 micrograms/kg/day to 10 mg/kg/day) of NDF/heregulin hybrid peptide composed of both alpha and beta forms. Carnahan also disclose a method for treating hearing loss in mammals, including humans, which is attributable to the degeneration of inner ear hair cells. The heregulin peptide acts by regenerating the inner ear hair cells associated with sensory epithelium. Please see col. 1, lines 58-64; col. 2, lines 1-27; col. 8, lines 24-27; claims 1-7.

8. Claims 5-6, 11 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

Conclusion

Claims 1-4, 7-10, 12-17 are rejected.

Claims 5-6, 11, are objected to.

Claim 18 is withdrawn from consideration.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to **Cybille Delacroix-Muirheid** whose telephone number is **(703) 306-3227**. The examiner can normally be reached on Tue-Fri from 8:30 to 6:00. The examiner can also be reached on alternate Mondays.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, **Marianne Seidel,** can be reached on **(703) 308-4725**. The fax phone number for this Group is (703) 308-4242.

Any inquiry of a general nature or relating to the status of this application or proceeding should be directed to the Group receptionist whose telephone number is (703) 308-1235.

CDM

Dec. 5, 2002

Cybille Delacroix-Muirheid
Patent Examiner Group 1600